

Progress Report for Fill Hydrology

May 26, 2000

Introduction

This report outlines the progress made to date for the fill hydrology work plan. This work plan, which can be reviewed in its entirety on a separate page on this web site, is being carried out by USGS in cooperation with the Office of Mining and Reclamation of the WV DEP. The purpose of the work plan is to determine how mountaintop mining and valley fills (1) affect flood flows in headwater and downstream basins, and (2) affect streamflows relevant to aquatic habitat in headwater basins. For further information, you may wish to contact Jim Eychaner of USGS at (304) 347-5130 ext 225.

Progress to date

Task A. Continuous rainfall-runoff measurements

Rainfall and streamflow data for three nested small basins and one separate larger basin were sent to EIS team members on April 5, 2000. The data include daily flows through February 2000 and storm-event data for the three largest peaks at each site.

Water-level sensors and recorders continue to operate at three sites in the Ballard Fork subbasin (2.12 mi²) of the Mud River basin, along with four nearby rain gages, and at Clear Fork at Whitesville (62.8 mi²) with two rain gages. One field installation has been modified to decrease the effects of sedimentation near the water-level sensor. Under a related project, water-level sensors and recorders are operating at Mud River at Mud, Spruce Fork at Sharples, and Twenty mile Creek at Vaughan.

Task B. Minimum flow and aquatic habitat

A data summary for one discharge measurement and the modified Wolman pebble counts at 49 sites in the Clear, Mud, Spruce, and Twenty mile basins was sent to EIS team members on April 5, 2000. These measurements represent moderately high baseflow conditions.

Public communication of results

Extracts of the data were presented and discussed at a poster session during the West Virginia Surface Mine Drainage Task Force Symposium on April 4, 2000. In Ballard Fork the peak discharge on December 14, 1999, was half as high in the mined basin as in the unmined or mixed basins, but flow in those two basins receded within 16 hours to less than in the mined basin. Median measured flow was more than 10 times greater in 30 mined basins than in 19 unmined basins, but the median streambed particle size was distinctly smaller in the mined basins.

Timetable for Completing the Technical Study

Task A. Continuous rainfall-runoff measurements

September 30, 2001: Continue records of rainfall and discharge through this date, with special attention to large peak flows. Compute, publish, and deliver results to interested parties as additional deadlines are established. Assemble physical descriptions of each basin to support potential simulation studies that might be funded later.

Task B. Minimum flow and aquatic habitat

Summer 2000: Complete three additional discharge measurements at each site plus measurements of representative channel cross sections. Field teams were prepared to measure during the week of May 22, but widespread rain left streams at levels that did not represent minimum flow. The work will be rescheduled as weather allows. Each set of measurements will be made in as short an interval as possible to allow additional intercomparability.

December 31, 2000: Publish a report comparing minimum flow statistics and physical habitat in the channels among groups of sites that have different mining conditions.